

WHAT IS CLAIMED IS:

1. A link mechanism comprising:
 - a first link including a cylindrical first pin boss portion;
 - a second link including a cylindrical second pin boss portion; and
 - 5 a connecting pin passing through the first and second pin boss portions so as to allow a relative rotational movement between the first and second links within a limited range;
 - the first pin boss portion including a first narrow section extending in a circumferential direction of the first pin boss
 - 10 portion, and having an axial wall thickness as measured in an axial direction of the connecting pin;
 - the first pin boss portion further including a first wide section extending in the circumferential direction of the first pin boss portion, and having an axial wall thickness greater
 - 15 than the axial wall thickness of the first narrow section;
 - the second pin boss portion including a second narrow section extending in a circumferential direction of the second pin boss portion, and having an axial wall thickness as measured in the axial direction;
 - 20 the second pin boss portion including a second wide section extending in the circumferential direction of the second pin boss portion, and having an axial wall thickness greater than the axial wall thickness of the second narrow section;
 - the first wide section of the first pin boss portion and the
 - 25 second wide section of the second pin boss portion overlap each other in the axial direction.
2. The link mechanism as claimed in Claim 1, wherein the first wide section confronts the second narrow section in the

axial direction, and the second wide section confronts the first narrow section in the axial direction.

3. The link mechanism as claimed in Claim 1, wherein the
5 second link includes first and second side walls each formed with the cylindrical second pin boss portion, the first wide section of the first pin boss portion is placed in the axial direction between the second narrow sections of the first and second side walls, and the first narrow section is placed in the
10 axial direction between the second wide sections of the first and second side walls.

4. The link mechanism as claimed in Claim 1, wherein the link mechanism further comprises a third link linked with one
15 of the first and second links, to form a linkage of the first, second and third links, connected between a piston of an internal combustion engine, and an actuating section to vary a compression ratio of the engine; and wherein one of the first and second links is a lower link rotatably mounted on a crank
20 pin of a crankshaft of the engine.

5. The link mechanism as claimed in Claim 4, wherein the first and second links are so arranged that a combustion load due to a combustion pressure acting on the piston is applied to
25 the connecting pin from the first and second wide sections.

6. The link mechanism as claimed in Claim 4, wherein the first wide section of the first link includes a short subsection extending circumferentially from a link center line of the first
30 link in a first rotational direction, and a long subsection extending from the link center line of the first link in a second

rotational direction opposite to the first rotational direction,
and having a circumferential length greater than a
circumferential length of the short subsection.

5 7. The link mechanism as claimed in Claim 6, wherein the
short subsection of the first link extends circumferentially
toward a swing axis about which the second link is swingable,
and the long subsection of the first link extends
circumferentially away from the swing axis of the second link;
10 and the first link extends from a first end defining a link
connecting point, to a second end formed with the first pin
boss portion defining a link connecting point, and the link
center line of the first link is a line connecting the link
connecting points of the first and second ends of the first link.

15 8. The link mechanism as claimed in Claim 6, wherein the
long subsection is formed with an oil hole passing radially
through the long subsection.

20 9. The link mechanism as claimed in Claim 4, wherein the
link mechanism is a variable engine compression ratio
mechanism so arranged that a piston speed near a top dead
center of the piston is slower than a piston speed near a
bottom dead center of the piston.

25 10. The link mechanism as claimed in Claim 4, wherein the
second link is the lower link rotatably mounted on the crank
pin, the first link is an upper link connecting the lower link and
the piston of the engine; the lower link includes a bifurcated
30 end portion including first and second side arms each of which
is formed with the second pin boss portion; and the first pin

boss portion is placed between the second pin boss portions of the first and second side arms of the lower link.

11. The link mechanism as claimed in Claim 4, wherein the
5 first link is the lower link rotatably mounted on the crank pin, the second link is an upper link connecting the lower link and the piston of the engine; the upper link includes a bifurcated end portion including first and second side arms each of which is formed with the second pin boss portion; and the first pin
10 boss portion is placed between the second pin boss portions of the first and second side arms of the upper link.

12. The link mechanism as claimed in Claim 4, wherein the
first link is the lower link rotatably mounted on the crank pin,
15 the second link is a control link connecting the lower link to the actuating section; the control link includes a bifurcated end portion including first and second side arms each of which is formed with the second pin boss portion; and the first pin boss portion is placed between the second pin boss portions of the
20 first and second side arms of the control link.

13. The link mechanism as claimed in Claim 4, wherein the
lower link includes a main bearing portion formed with a hole
for receiving the crank pin, and first and second swing arms
25 which project from the main bearing portion in different directions and which are connected, respectively, with the other links.

14. The link mechanism as claimed in Claim 13, wherein the
30 main bearing portion, and the first and second swing arms of the lower link are integral parts of the lower link.

15. A piston crank mechanism for varying a compression ratio of an internal combustion engine, comprising:

5 a lower link mounted rotatably on a crank pin of the engine;

an upper link connecting the lower link with a piston of the engine;

a control link including a first end connected with the lower link; and

10 a support point adjusting mechanism connected with a second end of the control link and arranged to shift a support point of the second end of the control link to vary a compression ratio of the engine;

one of the lower link, the upper link and the control link
15 being a first link, a second link being another of the lower link, the upper link and the control link, the first link including a cylindrical first pin boss portion;

the second link including a cylindrical second pin boss
portion connected with the first pin boss portion by a
20 connecting pin passing through the first and second pin boss portions so as to allow a relative rotational movement between the first and second links;

the first pin boss portion including a first narrow section
extending in a circumferential direction of the first pin boss
25 portion, and having an axial wall thickness as measured in an axial direction of the connecting pin;

the first pin boss portion further including a first wide
section extending in the circumferential direction of the first
pin boss portion, and having an axial wall thickness greater
30 than the axial wall thickness of the first narrow section;

the second pin boss portion including a second narrow section extending in a circumferential direction of the second pin boss portion, and having an axial wall thickness as measured in the axial direction;

- 5 the second pin boss portion including a second wide section extending in the circumferential direction of the second pin boss portion, and having an axial wall thickness greater than the axial wall thickness of the second narrow section;

10 the first wide section of the first pin boss portion and the second wide section of the second pin boss portion overlap each other in the axial direction.